Subject: MSD Colloquium, Thurs, 6/8, 11am, 200 AUDITORIUM
From: Janice Coble <coble@anl.gov>
Date: Wed, 07 Jun 2006 16:16:57 -0500
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SPEAKER: DR. A. BUZDIN
Institut Universitaire de France
and
University Bordeaux I France

TITLE: "Proximity Effect in Superconductor-Ferromagnet Nanostructures"

DATE: Thursday, June 8, 2006

TIME: 11:00 a.m.

PLACE: Building 200, AUDITORIUM

HOST: Alex Abrikosov

Refreshments will be served at 10:45 a.m.

Abstract: A strong exchange field acting on the Cooper pairs in the ferromagnetic (F) metal leads to the damping oscillatory behaviour of the superconducting order parameter inside the F layer. In consequence in the superconductor-ferromagnet (S-F) multilayers the critical temperature and Josephson current depend in an oscillatory manner on the exchange field and thickness of ferromagnetic metal. These oscillations are related with the transition into the state where the phase of superconducting order parameter is opposite in S-F-S Josephson junction. The transition to this Pi-state may occur via the states with an arbitrary ground phase difference. The properties of this novel junction occur to be very peculiar. Domain structure in ferromagnet may provoke in S-F bilayer the appearance of the superconductivity localized near the domain wall. Inversely, under certain conditions, the superconductivity could trigger the transition into the short period domain state in the F layer.